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UTILITY PATENT APPLICATION TRANSMITTAL <small>(Only for new nonprovisional applications under 37 CFR 1.53(b))</small>	Attorney Docket No.	10597-0001-2
	First Inventor or Application Identifier	Olivier HERSENT
	Title	MULTIMEDIA DATA TRANSMISSION SYSTEM

APPLICATION ELEMENTS <small>See MPEP chapter 600 concerning utility patent application contents</small>	ADDRESS TO: Assistant Commissioner for Patents Box Patent Application Washington, DC 20231
Fee Transmittal Form (e.g. PTO/SB/17) (Submit an original and a duplicate for fee processing)	ACCOMPANYING APPLICATION PARTS
1. <input checked="" type="checkbox"/> Specification Total Pages 19	6. <input type="checkbox"/> Assignment Papers (cover sheet & document(s))
3. <input checked="" type="checkbox"/> Drawing(s) (35 U.S.C. 113) Total Sheets 3	7. <input type="checkbox"/> 37 C.F.R. §3.73(b) Statement <input type="checkbox"/> Power of Attorney <small>(when there is an assignee)</small>
4. <input checked="" type="checkbox"/> Oath or Declaration Total Pages 2	8. <input type="checkbox"/> English Translation Document <small>(if applicable)</small>
a. <input checked="" type="checkbox"/> Newly executed (original)	9. <input type="checkbox"/> Information Disclosure Statement (IDS)/PTO-1449 <input type="checkbox"/> Copies of IDS Citations
b. <input type="checkbox"/> Copy from a prior application (37 C.F.R. §1.63(d)) <small>(for continuation/divisional with box 15 completed)</small>	10. <input type="checkbox"/> Preliminary Amendment
i. <input type="checkbox"/> DELETION OF INVENTOR(S) <small>Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §1.63(d)(2) and 1.33(b).</small>	11. <input checked="" type="checkbox"/> White Advance Serial No. Postcard
5. <input type="checkbox"/> Incorporation By Reference <small>(usable if box 4B is checked)</small> <small>The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4B, is considered to be part of the disclosure of the accompanying application and is hereby incorporated by reference therein.</small>	12. <input type="checkbox"/> Small Entity Statement(s) <input type="checkbox"/> Statement filed in prior application. Status still proper and desired.
	13. <input checked="" type="checkbox"/> Certified Copy of Priority Document(s) (1) <small>(if foreign priority is claimed)</small>
	14. <input checked="" type="checkbox"/> Other: Notice of Priority
15. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below: <input type="checkbox"/> Continuation <input type="checkbox"/> Divisional <input type="checkbox"/> Continuation-in-part (CIP) of prior application no.: Prior application information: Examiner: Group Art Unit:	
16. Amend the specification by inserting before the first line the sentence: <input type="checkbox"/> This application is a <input type="checkbox"/> Continuation <input type="checkbox"/> Division <input type="checkbox"/> Continuation-in-part (CIP) of application Serial No. Filed on <input type="checkbox"/> This application claims priority of provisional application Serial No. Filed	
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MULTIMEDIA DATA TRANSMISSION SYSTEM

DESCRIPTION

Technical field

This invention relates to a multimedia data transmission system.

State of prior art

5 Conventional multimedia servers are designed to be accommodated on a single platform. Usually, they consist simply of an application that runs on a computer equipped with interface cards to the telephone network.

10 In its most widely distributed form, a host server is capable of finding data on external data servers accessible through the same LAN, using RPC (Remote Procedure Call) or ODBC (Open DataBase Connectivity) type protocols.

15 This type of structure is suitable for the accommodation of simple multimedia servers in which there is no dynamic information. A company that would like to have a server accommodated describes the required service logic (if the user types #1, "you
20 typed 1".... should be displayed) statically, and this logic runs on the service supplier accommodation platform independently.

On the other hand, it becomes impossible to accommodate an application that requests information
25 that necessitates close integration with one of the company's vital databases (booking statements, etc.), and the company must equip itself with its own infrastructure.

More and more companies would like to integrate
30 this type of multimedia service more closely with

internal data in their industrial process. The objective is to inform the customer in real time if the ticket that he has just purchased is available, the value of his share portfolio, etc. These are dynamic data that are only available within the company.

Conventional multimedia accommodation services are not capable of satisfying these requirements, such that requesting companies are obliged to install their own server with the associated investments (private telephone exchange, telephone lines, etc.).

In order to overcome the disadvantages of this type of server, the invention proposes a multimedia data transmission system, the purpose of which is to provide a dynamic multimedia service for companies who would like it, without obliging the company to purchase any hardware and while making a server accessible to the company using several technologies (particularly from the telephone network and from the Internet network), with fully transparent service logic.

20

Description of the invention

The system according to the invention relates to a multimedia data transmission system characterized in that it comprises a WAN, in which the confidentiality and security are not controlled from end to end, onto which a shared voice and/or video resources host server designed to provide a dynamic service to at least one user, and at least one call control server located at each service supplier are connected.

Advantageously, the host server connected to the network through an interface is composed of five subsystems:

- A protocol stack subsystem with an interface that:
 - receives calls from the data network at the exchange;

- detects incoming calls and captures caller and called party numbers;
- detects dial tones;
- generates arbitrary coding-decoding media data streams;
- receives arbitrary media coding-decoding data streams.
- A command interpreter subsystem capable of:
 - generating messages on detection of new calls to a call control server placed at a customer;
 - generating event messages;
 - making use of commands originating from call control servers placed at customers, such as:
 - * order to play a pre-recorded audio or video file,
 - * order to synthesize a voice message starting from a text,
 - * order to start waiting for a dial tone,
 - * order to disconnect the call,
 - * order for voice recognition or other application.
- A high performance transcoding resource subsystem.
- A voice synthesis and/or video resource subsystem.
- An audio or video sequences recording/reproduction module subsystem.

Advantageously, each call control server located at a customer is software that receives events signaled by the host server and sends commands in reaction to these events. This software can run on a computer equipped with two network interfaces, one connected to the WAN to communicate with the host server, and the other connected to a company private network in order to dialog with databases and other industrial processes belonging to the customer.

Thus, a new generation "accommodation" service can be provided in which all expensive resources (voice synthesis cards, etc.) are shared, while the customer

maintains control over the application and can interface it with whatever resources he wishes.

Brief description of the drawings

- 5 - Figure 1 illustrates a first embodiment of the invention;
- Figure 2 illustrates the dialog between an operator server with voice recognition and the server belonging to a company A;
- 10 - Figure 3 illustrates an example of a voice recognition procedure;
- Figure 4 illustrates an embodiment of a specialized page that reacts to voice.

Detailed presentation of an embodiment

15 The invention relates to a multimedia data transmission system that comprises a WAN, which may or may not be public, on which the confidentiality and security are not controlled from end to end, and onto
20 which a shared voice and/or video resources host server is connected and provides a dynamic service to at least one customer, and onto which at least one call control server located at each customer is also connected.

25 The invention consists of placing a voice resource in the WAN (capable of reproducing audio files, recording them, performing synthesis or voice recognition, detecting DTMF (Dual Tone MultiFrequency) tones from two sounds, equipped with a protected protocol that can remote control it from a wide area
30 network (such as the Internet network).

 The application that controls this voice resource may be located anywhere on the network. Thus, the server is a distributed platform in which expensive resources are located in the network, and in which the

service logic (software only) is located at the customer.

Therefore, the invention can be used to share the voice resource server located in the network of an operator between several customers that execute the service logic in their premises. The companies simply need to have a connection with the data network. The operator server is accessible either from multimedia stations connected to the data network, or from any telephone through a gateway.

With the invention, the supplier of the "accommodation" service provides a call control software to his customers, who run it locally on a machine in their network, and interface it with their critical databases.

When a call arrives for this customer, it reaches the shared voice resource platform. This platform analyzes the requested number or the "ALIAS" for IP (INTERNET PROTOCOL) calls and deduces the client concerned. It sends a new call notification through the WAN to the call control application for the customer concerned. In particular, this application may ask the following in return:

- play a prerecorded audio file;
- synthesize a text;
- record a text;
- ask for a video sequence to be sent if the connected person has an appropriate terminal;
- make a voice recognition.

The voice resource can be made above the H.323 protocol so that users can be connected through the switched telephone network (through an STN/IP gateway), or through the Internet network, indifferently.

In one advantageous embodiment, the host server is connected to the WAN through an Ethernet or other interface, and is composed of five subsystems:

- A first subsystem, which is an H.323 protocol stack,
5 for which the API (Application Programming Interface) is capable of:
 - detecting incoming calls and capturing the caller and called party numbers (or H.323 ALIAS);
 - detecting DTMF tones (transported in the H.245
10 protocol);
 - generating media data streams (sound + video) with arbitrary coding-decoding;
 - receiving media data streams (sound + video) with arbitrary coding-decoding;
- 15 • Possibly a second subsystem, which is a high performance transcoding resource, typically a digital signal processor card capable of transcoding the G.711 / G.723.1 protocols.
- 20 • Possibly a third subsystem which is a voice synthesis resource generating G.711 or G.723.1 type data streams, possibly with "streaming" capacities (division of a large file into successive small
25 elements with limited duration).
- Possibly a fourth subsystem, which is an audio and video sequence recording / reproduction module with "streaming" functions during reproduction.

30

The action of these subsystems is coordinated by a fifth subsystem which is essentially a command interpreter capable of:

- generating new call detection messages to a call
35 control server placed at a customer; it must

also choose the right call control server starting from the called number;

- generating event messages, for example corresponding to DTMF tones;

5 - implementing commands from call control servers placed at customers, such as:

- * order to play a prerecorded audio or video file,

10 * order to synthesize a voice message from a text,

- * order to go in waiting for a DTMF dial tone,

- * order to disconnect the call,

- * order for voice recognition or other application.

15 Calls from the switched telephone network are translated by an STN network/H.232 gateway for processing by the host server. The gateway function may possibly be integrated in the host server.

20 Other subsystems (voice recognition, fax generation/reception, etc.) may be added to increase the functional richness of the complete assembly.

25 In one advantageous embodiment, the call control server located at the customer is a simple software (for example "Window NT" service) that receives events signaled by the host server and sends commands in reaction to these events. This software may run on a computer provided with two network interfaces, one

30 connected to the Internet network to communicate with the host server, and the other connected to a company private network to dialog with databases and other industrial processes within the company.

The host computer is configured so as to not transmit IP packets from the Internet network to the internal network.

The customer can configure the service logic itself
 5 using a script language (for example Java Script, VisualBasic), or a graphic interface.

The dialog protocol may be any secure dialog protocol with short waiting times. In one embodiment,
 10 a protocol is used on a standard UDP in which each information block sent is in the following form:

```
<block><random><64 random bits></random><cipherblock>
                                encrypted data</cipherblock> </block>
```

15

The encrypted information block must have the following structure once it has been decrypted:

```
<clearinfo>
20 <serial>serial number</serial>
   <other information> ... <other information>
</clearinfo>
```

Information encrypted in the "cipherblock" block is
 25 obtained by encrypting the "clearinfo" structure using the DES (Data Encryption Standard) standard in CBC (Cipher Block Chaining) mode, using the 64 random bits for the initial exclusive OR. The sender's identity is proven by the possibility of finding an intelligible
 30 message with decryption. The receiver must memorize the last serial number received from the sender and discard any message received with a serial number less than or equal to the current serial number.

The sender can protect his transmission (UDP
 35 standard) by sending several identical messages. The

receiver memorizes the serial number of the first correctly received message and discards subsequent messages without examining them.

5 Figure 1 illustrates a first example use, which is for the communication by an IP interactive voice server.

10 A WAN network 10, for example Internet, in which the voice and/or video resource operator server 11 is connected to:

- an ordinary telephone 12 through a WAN telephone gateway 13;
- a multimedia station 14 through a two-directional link 15, of the H.323, SIP, or other type of voice data stream;
- three servers 16, 17 and 18 for companies A, B and C.

20 When the operator server 11 receives a new communication from a user, the first thing it does is to analyze the called number and then deduces which company server should manage the communication; for example server 16 for company A.

25 Company A makes fast part orders. Server 16 sends its welcome announcement stored in the welcome file in the operator server 11: "welcome to company A's fast order server, please press on the '*' key to begin". Informed users can interrupt this announcement by pressing on the '*' key.

30 As soon as the user presses on '*', the operator server 11 informs company A's server 16 with a "DTMF event" message. Company A's server 16 then begins to play the "Do_you_want_to_order" file which contains a recording of this phrase.

35 Company A's server 16 decides to use the voice command, to order the operator server 11 to start

recognition on the "yes, no" vocabulary. As soon as the user says "yes", the server 16 is informed by a "Word_recognition" message.

Server 16 then asks how many parts the customer
5 wants to order and records this number by voice recognition. It then stops the voice recognition procedure by a "Stop_recognition" command.

Finally, the server 16 repeats the amount of the order to the customer asking the operator server 11 to
10 synthesize the "You have ordered three parts" character string. The user then hangs up.

The dialog between the operator server 11 with voice recognition which receives an H.323, SIP or other voice data stream and company A's server 16, is
15 illustrated in figure 2.

Voice recognition procedures usually comprise two parts:

- 20 - the first part (A) uses the voice data stream (64 kbits for standard G.711 and 6.4 kbits for standard G.723.1) and extracts significant components from it (spectrum, etc.), the result is a low rate data stream between 4 and 8 kbits/s;
- 25 - the second part (B) attempts to recognize words in a vocabulary starting from components transmitted by the first part A.

The scheme illustrated in figure 3 shows how the different modules of a voice recognition procedure
30 communicate with each other.

There are two ways of creating a voice recognition procedure in the IP interactive server:

- When the customer who is calling the company server is not controlled by the network operator,
35 the A and B components have to be put on the

operator server. This is the method used in the above example.

- However if the network operator can, it is better to extract significant components at the customer in order to make less use of the passband on the network between the customer and the operator server. This extraction phase requires very little calculation power.

For example, if the client is an IP telephony software, the significant components extraction module may appear like a new speech encoder. The operator server then negotiates with the customer for use of this encoder during the connection.

Another possible embodiment is to put a software component in a specialized displayed HTML page (ActiveX or Java) that interfaces with voice resources on the customer station and only sends significant components of the voice data stream to the operator server. Thus, a specialized page can be created which reacts to voice, as in the example in figure 3.

Figure 4 illustrates another possible example embodiment with the IP audiotel server, for a specialized page that reacts to voice.

In this example embodiment, the customer is a software object ("ActiveX or Java") integrated in a specialized page. This object sends significant voice data stream components input on the customer station computer to the operator server. It can do this using the RTP protocol on the IP network, or simply the TCP protocol if the reaction time is not a major constraint.

The operator server recognizes words in this data stream and informs the company server of recognized words.

The company server then initiates actions as a function of the recognized words. For example, it can send a command message to the ActiveX component to display another specialized page.

5

The following protocol is used:

1. Connection request: Connection request message (operator server => company server)
 10 (Implicit in TCP/IP by opening the exchange mechanism in TCP/IP)
2. Call data: Transmit call data (operator server => company server)
 15 Called number
 Calling number
3. Read sound: Read a sound file (company server => operator server)
 20 Logical channel number
 Name of the element to which the response is to be notified
 Time in ms before playing the sound
 File name to be played
 Digit used to detect the end of the sound file
 25 Format of the sound file (Wav, Vox, ADPCM ...)
 Data format
 Sampling frequency
4. DTMF event message (operator server => company server)
 30 Logical channel number
 DTMF key code
5. Sound recording: Recording of a message (company server => operator server)
 35 Channel number
 Name of the element to which the response is to be notified
 Time before beginning the recording
 Name of the message save file
 End of recording character
 40 Maximum recording time
 Maximum silence time
 Save file format
 Data format
 Sampling frequency
 45 Send a beep to signal when the recording starts
6. Send tone: Send a tone (company server => operator server)
 Channel
 Name of the element to which the response is to be notified
 50 TimeBefore

- Dial Tone
- Frequency 1
- Frequency 2
- Amplitude 1
- 5 Amplitude 2
- Tone duration

- 7. Read chain: Concatenate a string of characters (company
- 10 server => operator server)
- Logical channel number
- Name of the element to which the response is to be notified
- Time before reading sound
- Character string, for which the data => sound conversion is
- to be made
- 15 End of file character string
- Sound file format (Wav, Vox, ADPCM ...)
- Data format
- Sampling frequency format
- 20 Mix size, so that two files can be mixed later (Smooth
- transition)
- Breakdown type, which will be used later for number
- generation time functions starting from a sound library
- Character used to separate expressions in the character
- string
- 25 File name resulting from the concatenation
- Word field name
- Sound field name
- Dictionary access path

- 30 8. Disconnect user: The caller hung up (operator server =>
- Company server)
- Logical channel number to be disconnected
- (Implicit in TCP/IP by closing the TCP/IP exchange mechanism)

- 35 9. Disconnect server: Disconnection request by the company
- server software (company server => operator server)
- Logical channel number to be disconnected

- 40 10. Voice synthesis:
- Logical channel number
- Name of the element to which the response is to be notified
- Text to be converted in voice synthesis
- Choose a specific voice, if required
- Speaking speed
- 45 Speaking frequency
- ...

- 11. Extended call (function of the call transfer request)
- 50 Logical channel number
- Name of the element to which the response is to be notified
- Transfer request time
- Number to which the call is to be transferred
- Call type

Number of rings before abandon
Time to analyze the result of the transfer request

- 5 12. Start recognition (function requesting beginning of voice
recognition)
Logical channel number
Name of the element to which the response is to be notified
Name of the words file to be analyzed
Digit used to detect the end of the sound file
10 Maximum recording time
Maximum silence time
Send a "beep" signaling the beginning of the recording
- 15 13. Stop recognition (function requesting the beginning of voice
recognition)
Logical channel number
- 20 14. Word recognition (function requesting the beginning of voice
recognition)
Logical channel number
Name of the element to which the response is to be notified
List of recognized words

25 We will now describe several other example
embodiments.

• *Call from the telephone network*

A person who would like to book a journey calls
0836011234. This number actually connects to an
30 STN/H.323 network gateway that converts the call into
IP data and sends it to the host voice resources
server.

The voice resources server analyzes the requested
number and deduces that the call must be controlled by
35 the call control server located at the IP address
192.12.13.14 (located in the travel agent).

Therefore, it sends a new call message to the
travel agent's call control server. This call control
server asks it to play a musical background quickly
40 presenting the company and asking the caller to press
"1" to book a voyage, or "2" to leave a message.

The person presses "1" and the host voice resources server retransmits the event to the travel agent's call control server.

The dialog continues. It could be imagined that
 5 the travel agent would like to announce the price of a particular voyage. The call control server looks in the travel agent's database for prices and availabilities, and asks the host voice resources server to play the recorded string "the price of your
 10 voyage is", and then to synthesize "2345" and then play "Francs".

- *Call from the Internet network*

An H.323 terminal clicks on a link starting from a
 15 travel agent's Internet site, provoking a call from the H.323 terminal to the H.323 host server. The server analyzes the called number and sends an indication for the new call to the travel agent's call control server.

The travel agent's call control server does not
 20 need to be modified, and can execute the same scenario as in the previous case.

But it can also choose to offer more services, since a protocol element informs it at the time of the indication of the new call that the call is incoming
 25 from the Internet network, it can suggest that a specific page should be viewed, or even give the order to the host server to play a video sequence describing a particular voyage.

The call is free for the Internet network user.
 30

- *Call from another country*

If the operator has installed another host voice resources server in another country, the travel agent may be accessible from this country. The operator
 35 simply reserves a number that is forwarded to the local

voice resources server. The server continues to
contact the company's call control server. The source
of the call is indicated when a new call indication is
received, so that the call control server can
5 dynamically adapt to the most suitable language when it
is helpful to do so.

This solution is much less expensive than a
conventional solution, since no international voice
communication is necessary.

SECRET 250446Z

CLAIMS

1. Multimedia data transmission system, comprising a wide area network, the confidentiality and security of which are not controlled from end to end, to which a shared voice resources and/or video resources host server providing a dynamic service to at least one user, and at least one call control server located at each service supplier, are connected.

2. System according to claim 1 in which the host server, connected to the network through an interface is composed of five subsystems:

- A protocol stack subsystem with an interface that:
 - receives calls from the data network at the exchange;
 - detects incoming calls and captures caller and called party numbers;
 - detects dial tones;
 - generates arbitrary coding-decoding media data streams;
 - receives arbitrary media coding-decoding data streams.
- A command interpreter subsystem capable of:
 - generating messages on detection of new calls to a call control server located at a customer;
 - generating event messages;
 - making use of commands originating from call control servers placed at customers, such as:

3. System according to claim 2, comprising a high performance transcoding resource subsystem.

4. System according to claim 3, comprising a voice synthesis and/or video resources subsystem.

5. System according to claim 4, comprising an audio or video sequences recording/reproduction module subsystem.

6. System according to claim 1, in which each call control server located at a client is a software that receives events signaled by the host server and sends commands in reaction to these events.

5 7. System according to claim 6, in which the software is running on a computer provided with two network interfaces, one connected to the WAN to communicate with the host server, the other connected to a company private network in order to dialog with
10 the customer's databases and other industrial processes

ABSTRACT

MULTIMEDIA DATA TRANSMISSION SYSTEM

This invention is related to a multimedia data transmission system comprising a wide area network (10), the confidentiality and security of which are not controlled from end to end, to which a shared voice resources and/or video resources host server (11) providing a dynamic service to at least one customer, and at least one call control server located at each customer, are connected.

Figure 1

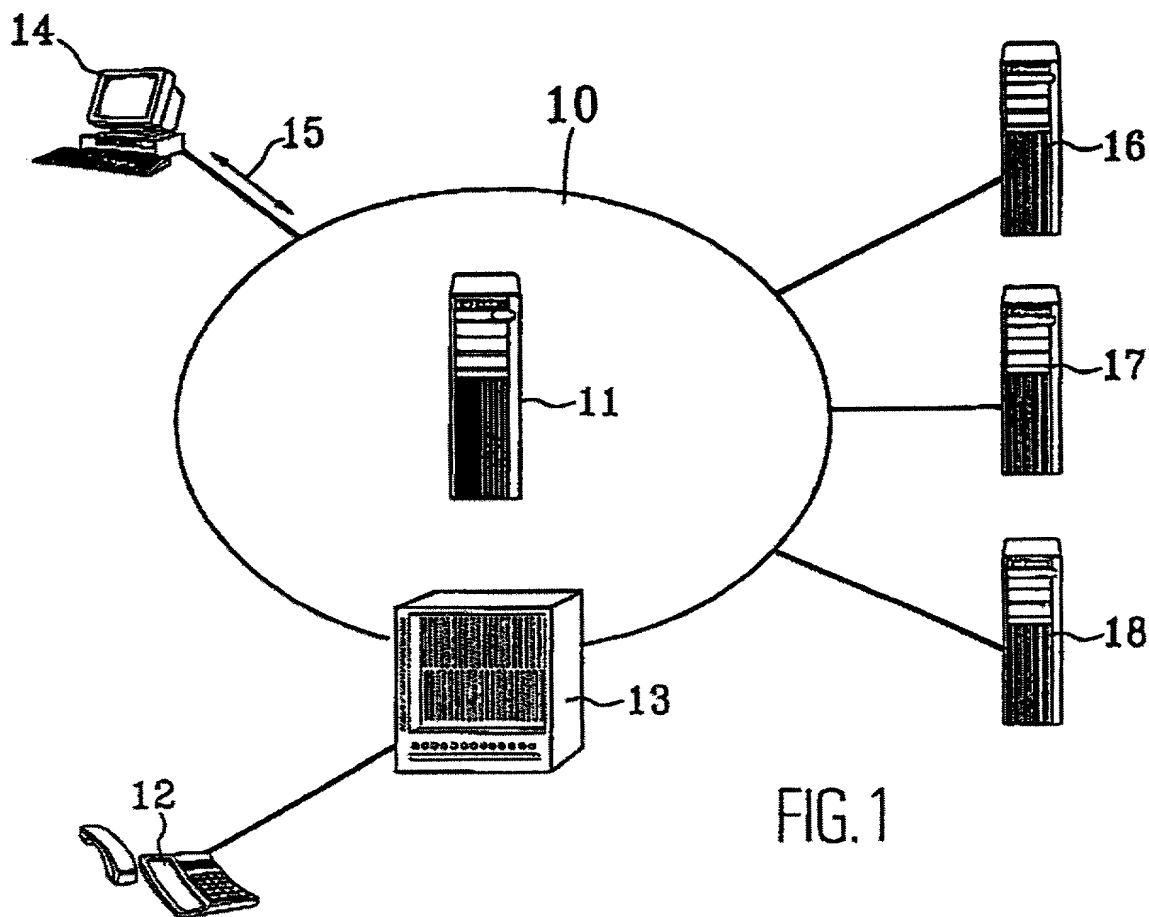
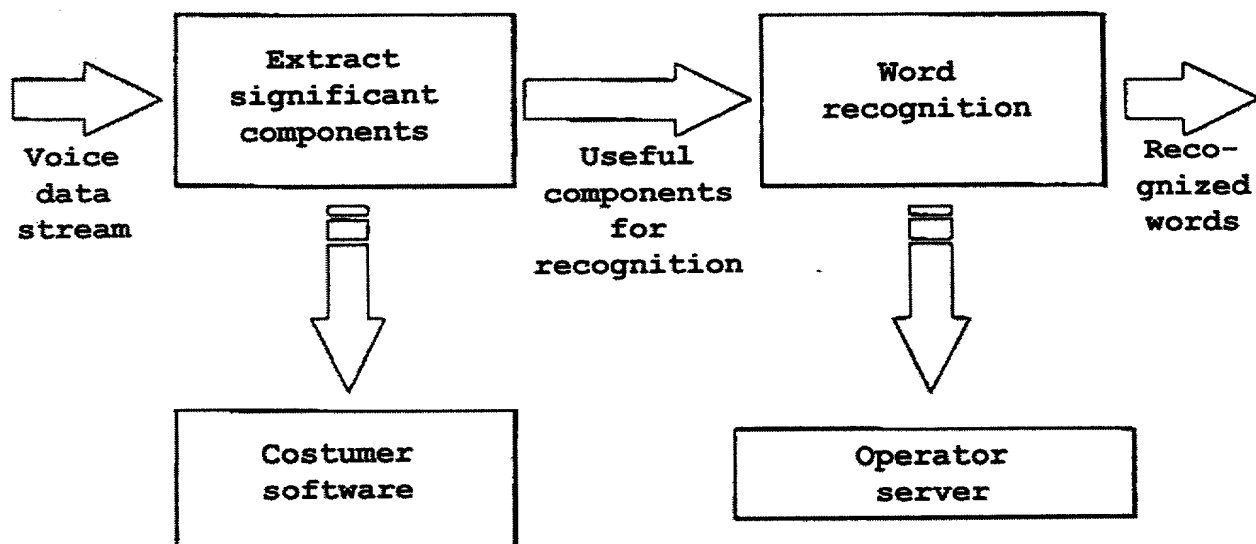


FIG. 3



Operator
server 11Company
server 16

A

Connection request
Call data (calling number, called number)
→

Read sound
(welcome_file, stopdigit=*)
←

DTMF event
("*")
→

Read sound
(Do_you_want_to_order_file?)
←

Start_Recognition
(company vocabulary "yes, no")
←

Word_Recognition
("yes")
→

Read sound
(how_many_parts_file?)
←

Start_Recognition
(company vocabulary "1,2,3,4,5")
←

Word_Recognition
("3")
→

Stop_Recognition
←

Voice synthesis
("You have ordered three parts,
you can hang up")
←

Disconnect user
→

FIG. 2

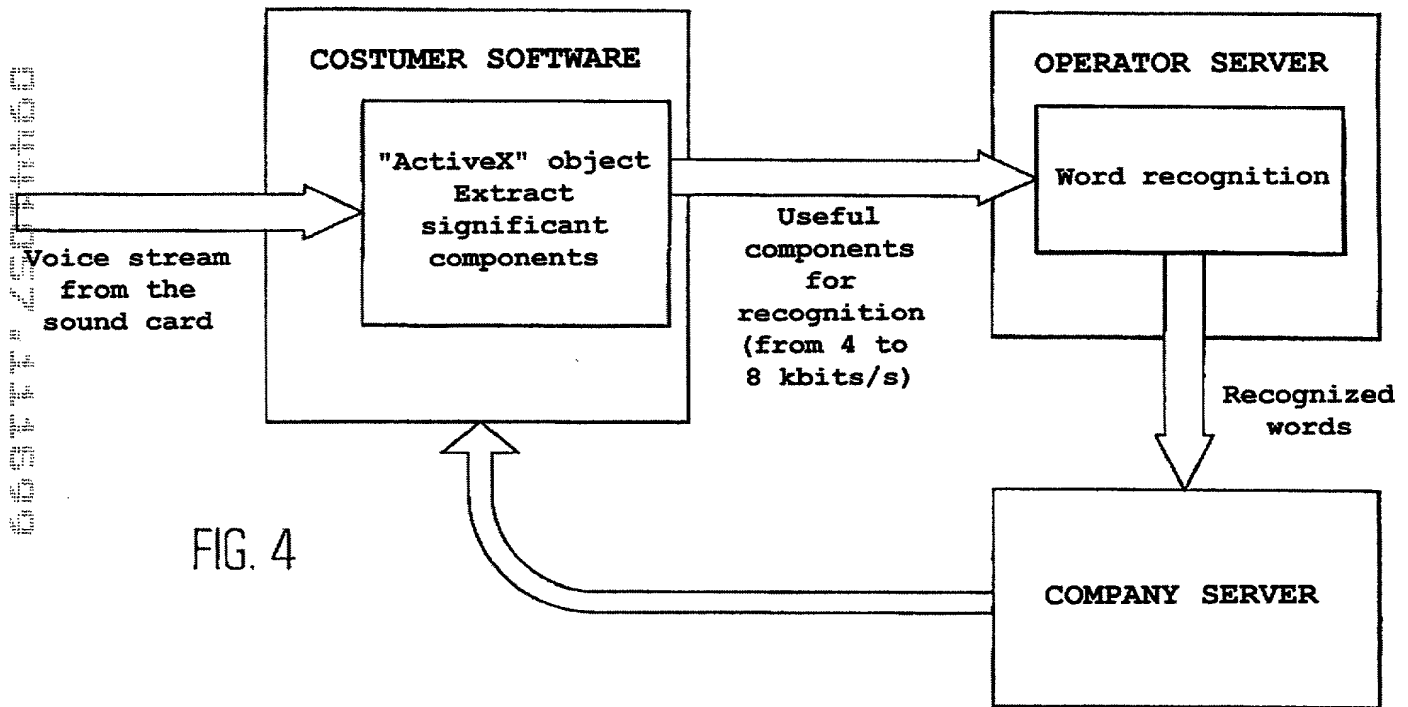


FIG. 4

Declaration, Power Of Attorney and Petition

Page 1 of 2

HERSENT Olivier

WE (I) the undersigned inventor(s), hereby declare(s) that :

My residence, post office address and citizenship are as stated below next to my name,

We (I) believe that we are (I am) the original, first, and joint (sole) inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled : MULTIMEDIA DATA TRANSMISSION SYSTEM.

the specification of which

☒ is attached hereto.

☐ was filed on

as Application Serial No.

and amended on

☐ was filed as PCT international application

Number

on

and was amended under PCT Article 19

on

We (I) hereby state that we (I) have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We (I) acknowledge the duty to disclose information known to be material to the patentability of this application as defined in Section 1.56 of Title 37 Code of Federal Regulations.

We (I) hereby claim foreign priority benefits under 35 U.S.C. § 119 (a)-(d) or § 365 (b) of any foreign application(s) for patent or inventor's certificate, or § 365 (a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed. Prior Foreign Application (s)

Application No.	Country	Day/month/Year	Priority Claimed	
98 14719	FRANCE	23/11/1998	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
_____	_____	_____	<input type="checkbox"/> YES	<input type="checkbox"/> NO
_____	_____	_____	<input type="checkbox"/> YES	<input type="checkbox"/> NO
_____	_____	_____	<input type="checkbox"/> YES	<input type="checkbox"/> NO

We (I) hereby claim the benefit under Title 35, United States Code, § 119 (e) of any United States provisional application(s) listed below.

(Application Number)

(Filing Date)

(Application Number)

(Filing Date)

We (I) hereby claim the benefit under 35 U.S.C. §120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of prior application and the national or PCT International filing date of this application.

Application Serial No.

Filing Date

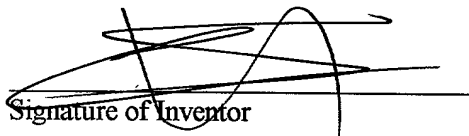
Status (pending, patented,
abandoned)

And we (I) hereby appoint : Norman F. Oblon, Registration Number 24,618; Marvin J. Spivak, Registration Number 24,913; C. Irvin McClelland, Registration Number 21,214; Gregory J. Maier, Registration Number 25,599; Arthur I. Neustadt, Registration Number 24,854; Richard D. Kelly, Registration Number 27,757; James D. Hamilton, Registration Number 28,421; Eckhard H. Kuesters, Registration Number 28,870; Robert T. Pous, Registration Number 29,099; Charles L. Gholz, Registration Number 26,395; Vincent J. Sunderdick, Registration Number 29,004; William E. Beaumont, Registration Number 30,996; Steven B. Kelber, Registration Number 30,073; Robert F. Gnuse, Registration Number 27,295; Jean-Paul Lavalleye, Registration Number 31,451; William B. Walker, Registration Number 22,498; Timothy R. Schwartz, Registration Number 32,171; Stephen G. Baxter, Registration Number 32,884; Martin M., Zoltick, Registration Number 35,745; Robert W. Hahl, Registration Number 33,893; and Richard L. Treanor, Registration Number 36,379; our (my) attorneys, with full powers of substitution and revocation, to prosecute this application and to transact all business in the Patent Office connected therewith; and we (I) hereby request that all correspondence regarding this application be sent to the firm of OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C., whose post Office Address is : Fourth Floor, 1755 Jefferson Davis Highway, Arlington, Virginia 22202.

We (I) declare that all statements made herein of our (my) own knowledge are true and that all statements made on information and belief are believed to be true ; and future that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardise the validity of the application or any patent issuing thereon.

HERSENT Olivier

NAME OF FIRST SOLE INVENTOR


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